WHAT IS CLAIMED IS:

1. A method for the treatment of mammalian disease conditions associated with cellular damage due to oxidative stress, said method comprising the step of inducing the *in vivo* production of at least one naturally occurring endogenous antioxidant by treating a mammalian subject with an effective amount of at least one carbon monoxide dependent guanylyl cyclase modulating purine derivative.

2. The method of claim 1 wherein said carbon monoxide dependent guanylyl cyclase modulating purine derivative is selected from the group consisting of guanosine, 4-[[3-(1,6-dihydro-6-oxo-9H-purin-9-yl)-1-oxo-propyl]amino]benzoic acid, and inosine pranobex.

3. The method of claim 1 wherein said effective amount of said at least one carbon monoxide dependent guanylyl cyclase modulating purine derivative produces a treating concentration of at least 1 μM.

4. The method of claim 2 wherein said mammalian subject is treated by orally administering said at least one carbon monoxide dependent guanylyl cyclase modulating purine derivative.

5. The method of claim 2 wherein said mammalian subject is treated by injecting said at least one carbon monoxide dependent guanylyl cyclase modulating purine derivative.

6. The method of claim 1 wherein said mammalian disease condition is Alzheimer's disease and related degenerative disorders.

7. The method of claim 1 wherein said mammalian disease condition is old age benign forgetfulness and related disorders.

8. The method of claim 1 wherein said mammalian disease condition is aging related loss of neurons or neuronal connectivity and related deterioration of sensory, motor, reflex, or cognitive abilities.

9. The method of claim 1 wherein said mammalian disease condition is Parkinson's disease and related disorders.

10. The method of claim 1 wherein said mammalian disease condition is spino-cerebellar atrophy.

11. The method of claim 1 wherein said mammalian disease condition is motor neuronopathy or Amyotrophic Lateral Sclerosis.

12. The method of claim 1 wherein said mammalian disease condition is damage to neurons or their processes by physical agents.

13. The method of claim 1 wherein said mammalian disease condition is damage to neurons by ischemia, anoxia, hypoxia, or hypoglycemia.

14. The method of claim 1 wherein said mammalian disease condition is damage to neurons by chemical agents.

15. The method of claim 1 wherein said mammalian disease condition is trauma to the heart, brain or spinal cord.

16. The method of claim 1 wherein said mammalian disease condition is epilepsy or seizures.

17. The method of claim 1 wherein said mammalian disease condition is peripheral neuropathy.

18. The method of claim 1 wherein said mammalian disease condition is learning disability.

19. The method of claim 1 wherein said mammalian disease condition is cerebral palsy.

20. The method of claim 1 wherein said mammalian disease condition is psychiatric disorder.

21. The method of claim 1 wherein said mammalian disease condition is memory disorder.

22. The method of claim 1 wherein said mammalian disease condition is Huntington's disease.

23. The method of claim 1 wherein said endogenous antioxidant is a bile pigment.

24. The method of claim 23 wherein said bile pigment is selected from the group consisting of biliverdin or bilirubin.

25. The method of claim 23 wherein said bile pigment is produced through the additional step of degrading heme with heme oxygenase.

26. A method for inducing the *in vivo* production of heme oxygenase in a mammal, said method comprising the step of treating a mammal with an effective amount of at

least one carbon monoxide dependent guanylyl cyclase modulating purine derivative.

27. The method of claim 26 wherein said carbon monoxide dependent guanylyl cyclase modulating purine derivative is selected from the group consisting of guanosine, 4-[[3-(1,6-dihydro-6-oxo-9H-purin-9-yl)-1-oxo-propyl]amino]benzoic acid, and inosine pranobex.

28. The method of claim 26 wherein said effective amount of said at least one carbon monoxide dependent guanylyl cyclase modulating purine derivative produces a treating concentration of at least 1 μM.

29. The method of claim 27 wherein said mammal is treated by orally administering said at least one carbon monoxide dependent guanylyl cyclase modulating purine derivative.

30. The method of claim 27 wherein said mammal is treated by injecting said at least one carbon monoxide dependent guanylyl cyclase modulating purine derivative.

31. The method of claim 26 further comprising the additional step of inducing the degrading of heme in said mammal with said heme oxygenase to endogenously produce bile pigment and carbon monoxide.

32. The method of claim 31 further comprising the additional step of modulating guanylyl cyclase in said mammal with said endogenously produced carbon monoxide.

33. The method of claim 31 further comprising the additional step of neutralizing or sequestering free radicals in said mammal with said endogenously produced bile pigment.

34. The method of claim 31 further comprising the additional step of inducing a reduction in the blood pressure of said mammal with said endogenously produced carbon monoxide.